# ENERGY STAR Battery Charging Systems Product List

## List Current as of January 20, 2017

Below are currently qualified ENERGY STAR models available for sale in the U.S.

* Date Available on Market is not available for products qualified prior to January 1, 2011.

** Date Qualified is not available for products qualified prior to January 1, 2011.

| ENERGY STAR Partner | Brand | Model Name | Model Number | Additional Model Information | End-Use Product Type | Battery Chemistry | Average Energy Ratio | Battery Voltage(s) for Qualification | Date Available On Market* | Date Qualified** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

# Definitions for Battery Charging Systems Product Listing Column Headers

| Column Header | Definition |
|---|---|
| **ENERGY STAR Partner** | An organization that signed a Partnership Agreement with EPA to manufacture or private label ENERGY STAR qualified products. |
| **Brand** | An identifier assigned by the manufacturer or private labeler to a product or family/series of products for sales and marketing purposes. |
| **Model Name** | An identifier assigned by the manufacturer or private labeler to a product or family/series of products for sales and marketing purposes. |
| **Model Number** | A distinguishing identifier, usually alphanumeric, assigned to a product by the manufacturer or private labeler. |
| **Additional Model Information** | This column includes for the qualified model or family, family members, additional model names, model numbers and other identifying information associated with a product or family/series of products for sales and marketing purposes. Other identifying information includes, but is not limited to, SKUs, UPC codes, retail numbers, and/or descriptions of models included/not included in the reported Model Family. |
| **End-Use Product Type** | Description of end-use product that the battery charging system supports. |
| **Battery Chemistry** | The chemistry of batteries charged by the product. Multiple battery chemistries may be provided for products that can charge multiple types of batteries. |
| **Average Energy Ratio** | A value of calculated from the battery charging systems test method and used to compare non-active energy efficiency performance. |
| **Battery Voltage(s) for Qualificati** | The voltage(s) of the batteries capable of being charged by the qualifying product. |
| **Date Available on Market** | The date that the model is available for purchase. |
| **Date Qualified** | The date on which the product was confirmed to meet the ENERGY STAR specification. |

# Key Efficiency Criteria

Qualified models meet all ENERGY STAR requirements as listed in the Version 1.1 ENERGY STAR Program Requirements for Battery Chargers that are effective as of January 1, 2006.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Nominal Battery Voltage** | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| **Maximum Energy Ratio** | 20 | 16.9 | 14 | 12 | 9.6 | 7.5 | 7 | 6.5 | 6.1 | 5.6 |
| **Nominal Battery Voltage** | 13 | 14.4 | 16 | 17 | 18 | 19 | 20 | 22 | 23 | ≥ 24.0 |
| **Maximum Energy Ratio** | 5.1 | 4.5 | 4.3 | 4.2 | 3.8 | 3.6 | 3.5 | 3.3 | 3.2 | 3 |

Note: To be eligible for ENERGY STAR qualification, a battery charging system must not exceed a maximum Nonactive Energy Ratio, which is based on the nominal battery voltage (Vb). For intermediate voltages, the battery charging system must not exceed the maximum Energy Ratio associated with the next highest voltage represented in the table.

| **Energy Ratio Equations** | | |
|---|---|---|
| **Equation** | **Energy Ratio Formula** | **Reference Voltage (V)** |
| 1. Normal (Single Battery) | ER = Nonactive Energy/ Battery Energy | V = VBattery |
| 2. Multi-Voltage A La Carte | ER = (Σ Nonactive Energies)/ (Σ Battery Energies) | V = VAverage* |
| 3. Multi-Port | ER = Nonactive Energy/ (Σ Battery Energies) | V = VSingle Pack* |

Note: * Voltage of Batteries in series shall be treated as a single battery with a voltage equal to the sum of all batteries in series for all analysis.